

~~CNG2B: A NOVEL~~ HUMAN CYCLIC
NUCLEOTIDE-GATED ION CHANNEL POLYPEPTIDE

5 CROSS-REFERENCES TO RELATED APPLICATIONS

The present application claims priority to USSN 60/226,253, filed August 17, 2000, herein incorporated by reference in its entirety.

10 STATEMENT AS TO RIGHTS TO INVENTIONS MADE UNDER
FEDERALLY SPONSORED RESEARCH AND DEVELOPMENT

Not applicable.

FIELD OF THE INVENTION

15 The invention provides isolated nucleic acid and amino acid sequences of CNG2B, antibodies to CNG2B, methods of detecting CNG2B, and methods of screening for modulators of cyclic nucleotide-gated cation channels using biologically active CNG2B. The invention further provides, in a computer system, a method of screening for mutations of human CNG2B genes as well as a method for identifying a three-dimensional structure of human CNG2B polypeptides.

20 BACKGROUND OF THE INVENTION

Cyclic nucleotide gated cation channels (CNG) are a class of non-selective cation channels that are opened by direct binding of cyclic nucleotides such as cGMP and cAMP. CNG channels are highly permeable to Na^+ and Ca^{2+} , and their activation leads to depolarization and increases in internal Ca^{2+} concentrations. These channels can link changes in cytoplasmic cyclic nucleotide levels to changes in cellular excitability, secretion of neurotransmitters and the stimulation of calcium-dependent pathways.

30 CNG family channel proteins are multimers and can be formed by at least two functionally distinct classes of subunits. The two classes of subunits, alpha and beta, share a common motif of 6 transmembrane domains, a pore motif and a cytoplasmic cyclic nucleotide binding domain (Finn *et al.*, *Annu. Rev. Physiol.* 58:395-426:1996). CNG alpha subunits can form functional channels as homomultimers, i.e., all subunits

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